

Statement of Basis

FACILITY: **Marathon Oil Company - Steamboat Butte Field**
PERMIT NO: **WY-0033740**
RESPONSIBLE OFFICIAL: R. J. Whisonenant
ADDRESS: 1501 Stampede Avenue
Cody WY 82414
PHONE: (307) 527-2127 (Marvin Blakesley)
PERMIT TYPE: Minor Industrial (Renewal)

Background Information

This proposed permit authorizes the discharge of produced water from Outfall 001, discharging from the north location (Latitude 44° 15' 29" Longitude 108° 54' 05"), and Outfall 002, discharging from the south location (Latitude 43° 15' 08" Longitude 108° 53' 40"), at the oil production wastewater treatment facilities for the Marathon Oil Company - Steamboat Butte Field oil production facility located in SW1/4 of Section 5 and the NW 1/4 of Section 8, Township 3N, Range 1W, (Latitude 44° 15' 29" Longitude 108° 54' 05" and Latitude 43° 15' 08" Longitude 108° 53' 40"), Fremont County, Wyoming. This facility is within the exterior boundaries of the Wind River Indian Reservation. This permit is a renewal of NPDES Permit Number WY-0033740, which expired on June 30, 2004, and was administratively extended.

Produced oil, water, and gas are separated in tanks by gravity, heat and emulsion breaking chemicals. The facility is currently or intends to use cross-linked polymer treatments to enhance recovery. A flow diagram is attached as Attachment A. Water is discharged through settling ponds where the remaining oil is removed by floatation and skimming prior to discharge to Mission Lake.

Receiving Waters

The discharge from this facility will enter Mission Lake. The discharge provides wildlife and stock watering opportunities. In addition, aquatic communities have developed in this ephemeral drainage, which are dependent upon the flow of this produced water.

The Northern Arapaho and the Eastern Shoshone Tribes have not adopted and EPA has not approved Tribal water quality standards for waters within the Wind River Reservation. Therefore, there are no water quality criteria to base development of water quality based limits. There are, however, applicable federal effluent limitation guidelines as discussed below.

Monitoring Data

Monitoring data from the period January 1996 to December 2004 is presented in Attachment B.

Effluent Limitations

These permit activities are covered under the effluent guideline for onshore oil and gas operations, subject to the Oil and Gas Extraction Point Source Category (40 CFR Part 435). The Oil and Gas Extraction Point Source Category Subpart C - Onshore Subcategory establishes the effluent limitation for produced water from Onshore operations as “No Discharge” [40 CFR 435.32 (a)]. However, Subpart E - Agricultural and Wildlife Water Use Subcategory allows the discharge of produced water from facilities west of the 98th meridian for use in agricultural and wildlife propagation. The effluent guideline further requires “. . . that the produced water is of good enough quality to be used for wildlife or livestock watering or other agricultural uses and that the produced water is actually put to such use during periods of discharge.”

The following effluent limitations will be required for this facility for each outfall:

Effluent Characteristic	Effluent Limitation		
	30-Day Average <u>a/</u>	7-Day Average <u>a/</u>	Daily Maximum <u>a/</u>
Specific Conductance, μ mhos/cm			7500
Total Dissolved Solids, mg/L			5000
Chlorides, mg/L			2000
Sulfates, mg/L			3000
Total Radium 226, pCi/l			60
Total Chromium, mg/L			3.0
Acrylamide monomer, mg/L			1.0
Oil and Grease, mg/L			10
The pH of the discharge shall not be less than 6.5 nor greater than 8.5 at any time.			
The discharge shall be free from substances in amounts which would cause a visible sheen or visible deposits in the receiving water or adjoining shoreline.			
No chemicals which contain toxic substances listed pursuant to Section 307 (a) of the Act shall be added to the discharge at levels which exceed the notification criteria specified under Conditions 3.9 and 3.10 of this permit.			
There shall be no addition of hexavalent chromium.			
There shall be no discharge of floating solids or visible foam in other than trace amounts.			

The discharge shall not present a hazard to humans, wildlife, or livestock.

a/ See Definitions, Part 1.1., for definition of terms.

These limits are based on EPA's Best Professional Judgement to implement the requirements of the Oil and Gas Extraction Point Source Category Subpart C - Onshore Subcategory and Subpart E - Agricultural and Wildlife Water Use Subcategory [40 CFR 435] and consideration of: 1) current uses of the receiving waters, 2) the current desires of the Tribes to have similar requirements on the Wind River Reservation and in the State of Wyoming, and 3) State of Wyoming Chapter 2.H - Surface Discharge of Water Associated with the Production of Oil and Gas requirements. Further, additional monitoring and limits were included for Acrylamide monomer and Total Chromium as the facility is currently or intends to use cross-linked polymer treatments to enhance recovery. These limits were contained in the previous permit except for Specific Conductance and Acrylamide monomer. These new limits will be effective immediately. These limits were included/added to protect the agricultural and wildlife water use requirements of Oil and Gas Extraction Point Source Category Subpart C - Onshore Subcategory and Subpart E - Agricultural and Wildlife Water Use Subcategory [40 CFR 435].

There are no water quality based limits proposed for this permit as the Northern Arapaho and the Eastern Shoshone Tribes have not adopted and EPA has not approved Tribal water quality standards for waters within the Wind River Reservation. Permit Condition 4.15.1 includes a reopener provision under which the permit may be reopened and modified, as appropriate, if Tribal Water Quality Standards are adopted and approved by EPA.

While EPA's National Water Quality Criteria are not directly applicable to the receiving waters, it should be noted that the quality of the produced water discharges may not meet these National Water Quality Criteria for aquatic life protection. If restrictive limits were placed in this permit to protect sensitive aquatic life as suggested by the National Water Quality Criteria, the permittee would cease discharge. This would be the most cost-effective option to meet these restrictive limits. Then, this water would be lost to wildlife, stock, and adaptive aquatic communities. In this permit to prevent this loss of water for these adapted, dependent aquatic communities and yet be protective of these aquatic communities, EPA will include in the permit a reopener clause and additional effluent monitoring to screen for hazardous/toxic constituents and to develop data for future water quality based limits, protective of these unique aquatic communities (see discussion under the "Hazard Screening Requirements").

Self-Monitoring Requirements

The following self-monitoring requirements are included in this permit for each outfall:

Effluent Characteristic	Frequency	Sample Type a/
Total Flow, mgd b/	Monthly	Instantaneous
Specific Conductance, μ mhos/cm	Monthly	Grab

Effluent Characteristic	Frequency	Sample Type <u>a/</u>
Total Dissolved Solids, mg/L	Quarterly	Grab
Chlorides, mg/L	Quarterly	Grab
pH, units	Monthly	Grab
Oil and grease, visual <u>c/</u>	Monthly	Visual <u>c/</u>
Sulfates, mg/L	Quarterly	Grab
Acrylamide monomer, mg/L	Quarterly	Grab
Total Chromium, mg/L	Quarterly	Grab
Acrylamide monomer, mg/L	Quarterly	Grab

a/ See Definitions, Part 1.1., for definition of terms.

b/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate (in million gallons per day) during the reporting period and the maximum flow rate observed (in mgd) shall be reported.

c/ A monthly visual observation is required. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

Hazard Screening Requirements

EPA will include in the permit a reopener clause and additional effluent monitoring to screen for hazardous/toxic constituents and to develop data for future water quality based limits, protective of these unique aquatic communities. Within 30 days of issuance of this permit, a sample will be collected from each outfall and analyzed for the constituents specified below, at the required detection limits. Within 90 days of issuance of this permit, a summary report on the produced water will be submitted to the US EPA and the Wind River Environmental Quality Commission. This summary report will include the results and detection limits for each of the constituents. Based upon the results of this screening, this permit may be reopened and effluent limits and monitoring requirements established for constituents that may present a hazard.

Parameter	Required Detection Limits and Required Units
Arsenic, Total	1 µg/l
Aluminum, Total Recoverable	50 µg/l
Cadmium, Total Recoverable	5 µg/l
Chromium, Total Recoverable	5 µg/l

Parameter	Required Detection Limits and Required Units
Chlorides	5 mg/l
Copper, Total Recoverable	5 µg/l
Iron, Total Recoverable	50 µg/l
Lead, Total Recoverable	2 µg/l
Manganese, Total Recoverable	50 µg/l
Mercury, Total Recoverable	0.001 µg/l
Nickel, Total Recoverable	5 µg/l
Radium 226, Total Recoverable	0.2 pCi/l
Selenium, Total Recoverable	1 µg/l
Silver, Total Recoverable	5 µg/l
Sulfide/Hydrogen Sulfide (S=, HS-)	100 µg/l
Zinc, Total Recoverable	5 µg/l
Hardness, Total	10 mg/l as CaCO ₃
Uranium, Total Recoverable	5 µg/l
Gross Alpha and Beta Radiation	0.2 pCi/l
Dissolved Oxygen	1 mg/l
Chemical Oxygen Demand	3 mg/l

Reporting Requirements

The facility is required to report effluent data semi-annually on a discharge monitoring report. If no discharge occurred during that period, the report is to be marked "no discharge".

ReOpener Conditions

EPA will include in the permit reopener clauses for Water Quality Standards adoption and hazard screening. Permit Condition 4.15.1 includes a reopener provision under which the permit may be reopened and modified, as appropriate, if Tribal Water Quality Standards are adopted and approved by EPA. Permit Condition 4.16. includes a reopener provision under which the permit may be reopened and modified, as appropriate, if constituents are present that constitute a hazard.

Michael Reed
U.S. EPA
November 8, 2005